Leaner-Hanger-Stump Guidance

Eligible vegetative debris may include tree limbs, branches, stumps, or trees that are still in place, but damaged to the extent they pose an immediate threat. These items are ineligible if the hazard existed prior to the incident, or if the item is in a natural area and does not extend over improved property or public-use areas, such as trails, sidewalks, or playgrounds. Pruning, maintenance, trimming, and landscaping are ineligible. Due to these reasons and other eligibility criteria described below, FDEM recommends that Applicants use Form FROC-GUI-004: Leaner-Hanger-Stump Ticket, Photo Sheet and Checklist Template, and if necessary, an Additional Photo Sheet to document eligible work performed on these activities.

Contractors typically charge debris removal based on a unit price for volume (cubic yards) or weight (tons). A hazardous tree or stump may be collected individually. When these items are collected individually, contractors often charge a price per tree or stump based on its size. FEMA encourages Applicants to procure branch or limb removal from trees on a one-time charge per tree basis as opposed to a unit price per limb or branch to facilitate more cost-effective operations. FEMA has specific eligibility criteria and documentation requirements for funding these items based on a price per each item instead of by volume or weight. If the Applicant does not provide sufficient documentation, it jeopardizes its PA funding.

Broken Limb or Branch Removal

Removal of broken limbs or branches that pose an immediate threat to the public are eligible. An example is a broken limb or branch that is hanging over improved property or public-use areas, such as trails, sidewalks, or playgrounds if it could fall and cause injury or damage to improved property.

FEMA does not fund removal of broken limbs or branches located on private property unless:

- The limbs or branches extend over the public ROW;
- The limbs or branches pose an immediate threat; and
- The Applicant removes the hazard from the public ROW (without entering private property).

Only the minimum cut necessary to remove the hazard is eligible. For example, cutting a branch at the trunk is ineligible if the threat can be eliminated by cutting it at the closest main branch junction.

Tree Removal

FEMA considers incident-damaged trees to be hazardous and eligible for removal if the tree presents a hazard to the public due to conditions including, but not limited to:

- Deterioration or physical damage to the root system, trunk, stem, or limbs; or
- The direction and lean of the tree per the Occupational Safety and Health Standards.

For trees that have 50 percent or more of the root-ball exposed, removal of the tree and root-ball and filling the root-ball hole are eligible. For contracted removal of a tree with a root-ball, FEMA will not reimburse two separate unit costs to remove the tree and its root-ball.

For trees that have less than 50 percent of the root-ball exposed, FEMA only provides PA funding to flush cut the item at ground level and dispose of the cut portion based on volume or weight. Grinding any residual stump after cutting the tree is ineligible.

Stump Removal

For stumps that have 50 percent or more of the root-ball exposed, removal of the stump and filling the root-ball hole are eligible. If grinding a stump in-place is less costly than extraction, grinding the stump in-place is eligible.

Stump removal in areas with known or high potential for archaeological resources usually requires that FEMA further evaluate and consult with the State Historic Preservation Officer or Tribal Historic Preservation Officer. If the Applicant discovers any potential archeological resources during stump removal, the Applicant must immediately cease work and notify FEMA.

Contracted Stump Removal

FEMA only reimburses contracted costs charged on a per-stump basis if extraction is required as part of the removal. Applicants need to ensure the price for stump removal includes extraction, transport, disposal, and filling the root-ball hole.

For stumps that have less than 50 percent of the root-ball exposed, FEMA only provides PA funding to flush cut the item at ground level and dispose of the cut portion. Grinding any residual stump is ineligible.

For stumps that do not require extraction, FEMA only provides PA funding based on volume or weight as removal of these stumps does not require special equipment. If the Applicant claims reimbursement of these stumps on a per stump basis, FEMA limits PA funding based on a unit price for volume or tons, calculated using the Stump Conversion Table on page 4 of this document.

If the Applicant incurs additional costs, staff should complete Form FROC-SUM-004, Hazardous Stump Summary and present documentation to substantiate the costs as reasonable based on the equipment required to perform the work.

Documentation Requirements for Hazardous Limbs, Trees, and Stumps
The Applicant must retain, and provide when requested, all of the following documentation to support the eligibility of contracted work to remove tree limbs, branches, stumps, or trees that are still in place:

- Specifics of the immediate threat with the location (geographical coordinates in latitude, longitude) and photograph or video documentation that establishes the item is on public property;
- Quantity removed;
- Quantity, location, and source of material to fill root-ball holes; and
- Description of equipment used to perform the work.

Stump Conversion Table

Diameter to Volume Capacity

FEMA quantifies the number of cubic yards of debris for each size of stump based on the following formula:

$$\frac{[(\text{Stump Diameter}^2 \times 0.7854) \times \text{Stump Length}] + [(\text{Root-Ball Diameter}^2 \times 0.7854) \times \text{Root-Ball Height}]}{46{,}656}$$

0.7854 is one-fourth Pi and is a constant.
46,656 is used to convert cubic inches to cubic yards and is a constant.

The formula used to calculate the cubic yardage used the following factors, based upon findings in the field:

- Stump diameter measured 2 feet up from the ground
- Stump diameter to root-ball diameter ratio of 1:3.6
- Root-ball height of 31 inches

Stump Diameter (Inches)	Debris Volume (Cubic Yards)	Stump Diameter (Inches)	Debris Volume (Cubic Yards)
6	0.3	46	15.2
7	0.4	47	15.8
8	0.5	48	16.5
9	0.6	49	17.2
10	0.7	50	17.9
11	0.9	51	18.6
12	1	52	19.4
13	1.2	53	20.1
14	1.4	54	20.9
15	1.6	55	21.7
16	1.8	56	22.5
17	2.1	57	23.3
18	2.3	58	24.1
19	2.6	59	24.9
20	2.9	60	25.8
21	3.2	61	26.7
22	3.5	62	27.6
23	3.8	63	28.4
24	4.1	64	29.4
25	4.5	65	30.3
26	4.8	66	31.2

Stump Conversion Table, Continued

Diameter to Volume Capacity

FEMA quantifies the number of cubic yards of debris for each size of stump based on the following formula:

$$\frac{[(\text{Stump Diameter}^2 \times 0.7854) \times \text{Stump Length}] + [(\text{Root-Ball Diameter}^2 \times 0.7854) \times \text{Root-Ball Height}]}{46{,}656}$$

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- Stump diameter measured 2 feet up from the ground
- Stump diameter to root-ball diameter ratio of 1:3.6
- Root-ball height of 31 inches

Stump Diameter (Inches)	Debris Volume (Cubic Yards)	Stump Diameter (Inches)	Debris Volume (Cubic Yards)
25	4.5	65	30.3
26	4.8	66	31.2
27	5.2	67	32.2
28	5.6	68	33.1
29	6	69	34.1
30	6.5	70	35.1
31	6.9	71	36.1
32	7.3	72	37.2
33	7.8	73	38.2
34	8.3	74	39.2
35	8.8	75	40.3
36	9.3	76	41.4
37	9.8	77	42.5
38	10.3	78	43.6
39	10.9	79	44.7
40	11.5	80	45.9
41	12	81	47
42	12.6	82	48.2
43	13.3	83	49.4
44	13.9	84	50.6
45	14.5		